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WEEKLY STATION REPORTS

OF THE DIVISION OF

DRY LAND AGRICULTURE

BUREAU OF PLANT INDUSTRY

U. S. DEPARTMENT OF AGRICULTURE

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REPORT FOR THE MONTH OF JANUARY, 1935.

HAVRE: (Report for the months of December, 1934, and January, 1935.)

The temperatures in December were mild until the 23rd. After that date zero or lower was recorded each day, with an absolute minimum of -18° on the 24th, and a monthly mean of 21.7° or 1.6° above the average. With the absolute maximum of 55° recorded on the 11th, the range for the month was 73°.

Precipitation amounted to 0.48 inch, which was recorded in 13 days, with a total snowfall of 7.1 inches.

The total precipitation for 1934 was 9.31 inches, which is 4.21 below the normal. The total snowfall was 38.5 inches. The mean temperature for the year, 46.2°, is a new station high and I understand a new record for the Weather Bureau beginning in 1880. The absolute maximum temperature for the year was 101°, and the minimum was -18°.

Temperatures in January were cold until the 23rd. From the 12th to the 23rd there was a severe cold spell, during this time the absolute minimum was -36° which was recorded on the 19th. The mean temperature was -3°. This was the third coldest January recorded since 1916.

Beginning on the 23rd temperatures rose very rapidly. This increase in temperature was accompanied by a chinook wind, this caused very rapid melting of the snow and resulted in a large amount of run-off. The town of Havre was flooded, most of the streets were filled with water and ice. A sudden drop in temperature before the water had an opportunity to run away has left quite a covering of ice - this, however, is melting although rather slowly. Chinook conditions have prevailed for the most part after the 23rd.

Precipitation for the month amounted to 0.51 inch, recorded on 18 days, with a total snowfall of 11.7 inches.

Wind velocity in these two months has not been unusually high at any time. There was however a steady wind on December 31 and January 1, which gave a high total wind velocity. Because of the steadiness of the wind a new record for 48 hours was established. Because of the moist ground and snow cover very little soil blowing occurred.

Stock in this part of the State are reported to be wintering fairly well up to this time; there has been very little loss, and the supply of feed has not been exhausted. Hay however is selling from $12 to $15 in the stack. Should there be another severe cold spell, it is possible that there would be some losses. Because of drought conditions last year there is very little available range.

Director Linfield was at the station January 21.

HUNTLEY:

Temperatures during the first 10 days of January were moderate, and most of the snow received during the last few days of December melted. On January 12 the weather turned suddenly colder, the mercury dropping to -13° in a few hours. Sub-zero temperatures were recorded every day from January 12 to 23, inclusive, the minimum for the period being -26 on the 19th. Light snows fell during the coldest days, but it is doubtful if the snow cover was much protection to winter wheat.

The last week of the month has been mild with temperatures reaching 60° or more.

A chinook wind began blowing on the afternoon of January 24, and by the following evening all of the snow had melted with considerable loss of moisture through run-off. For two days about the 20th the air was filled with a very fine dust apparently borne by an east wind and dropping from a great altitude. At the end of the period the snow and buildings were given a brownish cast by the dust which had settled upon them.

An inspection of winter wheat plantings since the disappearance of the snow has revealed the crop to be in poor condition to withstand adverse agencies between now and April 1.

Maximum temperature, 62°; minimum, -26°; precipitation, 0.45 inch.

SHERIDAN:

Precipitation for January was the lightest yet recorded here for that month. There was a little snow on the ground for the first three weeks, but hardly a full cover at any time. Plowed land was bare throughout all the coldest weather.

The mean temperature for the month was about 7° above the station average for January. Temperatures were about average for the first half of the month. There was one fairly cold period during the last half, followed this last week by quite warm weather with maximum temperatures above 50° on nine of the last ten days.

Wind movement was slightly below the average, with no very high winds, but was above the average throughout the coldest weather, making it seem much colder than it actually was.

Except for the one cold period, the month was fairly easy on livestock. Although the range was open the most of the month, the feed there is poor and considerable feeding was necessary.

Carpenter work on the building under construction by the State was completed.

Maximum temperature, 56°; minimum, -24°; precipitation, .08 inch.

DICKINSON:

Although January began and ended with moderate temperatures, a cold spell from the 13th to the 24th brought the mean for the month slightly below normal. A minimum of -37° was recorded on the 23rd. The temperature rose 75° in about 30 hours on the 23rd and 24th. The maximum for the month was 53° on the 31st. Precipitation amounted to only 0.39 inch. Fields were bare of snow before the end of the month, as a result of the mild weather of the last week. Roads were open all month. Relief workers were employed nearly all month on roads in the locality. Less feed was required than expected, because of the open weather during the month.

C. R. Enlow, Forage Crops and Diseases, visited the station January 20.

MANDAN:

Arboriculture - The year 1934 was anything but favorable for all types of arboricultural plantings. Practically no moisture was present in the upper layers of the soil the previous fall, resulting in all trees and nursery stock going into the winter in weak condition.

Conifer trees commenced turning brown and dying early in March. This dying continued the entire summer and fall, resulting in the loss of a large number of trees of both coniferous and also deciduous species.

Species testing blocks which became practically 100 per cent loss by fall are all species of birch, mountain ash, and larch. Several species or varieties of poplar and willow became a total loss, and surviving species or varieties are in very weak condition. Other species showing major losses are soft maple, European basswood, pin-cherry, hawthorn, sumac, butternut, Norway pine, jack pine, Scotch pine, Black Hills spruce, and white spruce. Many other species suffered severe killing back, but the majority of the trees show some evidence of life towards the lower part of the trunk. Green ash, Siberian pea-tree, chokecherry, buckthorn, Russian olive, hackberry, Chinese elm, American elm, western yellow pine, Colorado blue spruce, Englemann spruce, Douglas fir, and red cedar stand out as being the most drought resistant of the older species. Chinese elm suffered the heaviest losses in this latter group. Western yellow pine and red cedar have again demonstrated their remarkable resistance to drought.

The various species in shelter-belt combinations, pruning, cultivation, spacing, and other tests suffered various degrees of injury and losses very similar to those in the species testing blocks. Many of the trees in the various tests are now in poor condition, and it will probably be necessary to discard some of the tests as a result. In the methods of cultivation tests, the trees under neglect suffered more than the mulched trees during 1934. In previous years the neglected trees have been superior to the mulched trees.

Farm shelter belts were generally in poor condition. Heavy killing back and losses have occurred in many of the plantings visited. Evergreens suffered more than hardwood trees, many plantings several years of age becoming a complete loss. Some farms were found abandoned and the trees open to stock; on others the farmers had removed the fences to permit the stock to browse the little green vegetation on the ends of branches. Leaf-eating insects were abundant and kept many trees defoliated the entire season. Some farmers refused to perform any cultivation or other work on the trees, the same expression being heard at the majority of farms "What's the use, trees cannot live when it is impossible for other crops to grow". Nevertheless, the shelter belt was the only green thing found on many farms. Plantings made in the spring of 1934 averaged 58.6 per cent survival for hardwoods and 10.3 per cent for conifers.

Production of nursery stock was practically a complete failure during 1934. Seeds of a few species germinated shortly after planting. The resultant seedlings burned off during May. Some of the species were replanted after the June rains. Most of the seedlings which later emerged were again taken by drought and heat. Very little stock, excepting green ash, is on hand for 1935 shipment. In addition, it has seriously affected the 1936 requirements of two-year seedlings. Ever-green stock which has been in the transplant field for two or more years was in good condition in the fall.

Moisture conditions over the area at the present time, appear very unfavorable for setting out trees this coming spring. Several accepted applicants for 1935 plantings have recently requested that their shipments of trees be postponed until 1936, owing to the absence of rain or snow up to this time. Many of the larger coniferous trees

in station plantings have "browned" badly the last month. Indications are that considerable losses will take place when growth commences in the spring.

Cold spells occurred in January near the first of the month and for a period from the 12th to 23rd. During this period the minimum temperature ranged from -9° to -35°, and on 4 or 5 days the maximum temperature was below zero. Very little wind occurred during the month. Precipitation was recorded on 17 days, as snow flurries came on numerous days. The ground is covered with an inch or two of snow at present.

Maximum temperature, 42°; minimum, -35°; precipitation, 0.13 inch.

At the present time the station staff is conducting short courses in Agriculture for members of the local C. C. Camp (Interior Department). Many of those in this camp are North Dakota farmers who are hoping, if possible, to return to their farms in the spring. The classes are held evenings, after office hours. The following is an outline of the courses and names of our staff assisting:

Agronomy: J. T. Sarvis, J. C. Thysell, J. C. Brinsmade.
Rotation and tillage methods.
Forage crops and pastures.
Small grain varieties and flax.

Horticulture: W. P. Baird, T. K. Killand.
Fruit growing, pruning, etc.
Gardening, vegetable growing, etc.
Landscaping, flowers, etc.

Shelter Belts: E. J. George.
History of tree planting in North Dakota.
Purpose of tree growing.
Varieties suitable for planting.
Methods of land preparation, and arrangement of plantings.
Care of trees after planting.

Dairying: A. L. Watt (Superintendent Dairy Station, Bureau of Dairy Industry.)
Dairy herds, care of and feeding.

Visitors during the month included C. R. Enlow, Forage Crops and Diseases; Donald W. Nelson, Land Acquisition Values, headquarters, Lincoln, Nebraska; R. J. Haskell, Extension Specialist, Bureau of Plant Industry.

BELLE FOURCHE:

The precipitation in January was 0.11 inch.

ARCHER:

The weather was dry and for the most part mild. The morning of January 20 temperature dropped to -24°. During January 26 the maximum temperature reached 65°. A few snow flurries occurred during the month.

These conditions have been favorable for livestock, which are holding their own fairly well, In irrigated sections alfalfa hay in the stack ranges from $12 to $14 per ton. Due to the open winter, this price is causing a degree of uneasiness.

Winter cereals are in very poor condition. The leaves of the winter wheat plants are covered with a light coat of dry soil which serves as a protection, but the leaves are becoming wilted. A goodly supply of moisture is needed before growing weather conditions occur. Reports indicate that farmers having winter wheat acreage are preparing to re-seed the land to spring wheat.

During the past two months two relief workers, an accountant and a civil engineer, have been working at the station. The engineer surveyed the experimental field, and a new set of cement markers have been placed, which makes the work of lining up the plots much quicker, more exact, and permanent. The elevation of all plots and land divisions were established on Series A and B and on all rotation plots in Section 1. A fairly good estimate of erosion which is visible to the casual observer can be made from the data obtained from the survey readings.

On January 17 the students of the Golden Prairie school spent the afternoon at the station.

Director W. L. Quayle, and L. B. McWethy visited the station January 29.

Maximum temperature, 65°; minimum, -24°; precipitation, 0.03 inch.

NORTH PLATTE:

Except for one 6-day period from the 19th to 24th, temperatures for the month were mild and the weather was open. During the week of cold weather, minimum temperatures ranged from -3° to -19°. However, the lowest maximum recorded was 1°, and there were only seven days in the month with maximum temperatures below freezing. The mean temperature of 28° is 5.1° in excess of normal. January precipitation was 0.18 inch. Little snow has fallen, and as there was none on the ground at the beginning of the month, ranges have remained open. On account of the severe feed shortage, livestock are in poor condition, but so far the losses reported have been light. Winter wheat is apparently in fair condition; but the cover is light, and severe blowing may occur if the surface remains dry. In the sandhill region damage by blowing to date has been the heaviest experienced in many years. The high percentage of abandonment already evident will increase if dry weather and high winds prevail during the coming months.

AKRON:

The weather has been ideal, with only one cold spell lasting only two nights and one day. The minimum for the month was -17° the night of January 20. The maximum on the 20th was -7°. A slight showing of snow accompanied this storm which gave 0.01 inch of water. A trace of snow was recorded on the 11th. The maximum for the month was 65° on the 27th. The minimums have consistently been below freezing, but the days are clear and sunny. Wind movement has been barely enough to supply water by means of the windmills.

COLBY:

January was dry, fairly warm, and mostly pleasant, except for a period of subzero weather from the 20th to the 24th. Precipitation, mostly snow flurries, was recorded on five days, but only once did it amount to more than a trace, and that was 0.01 inch on the night of the 15th. Between the 20th and the 24th the minimum temperatures ranged from -4° to -19°. There were few windy days, and soil blowing was noted on only one day.

Winter wheat continues to deteriorate on account of the dry weather. Where there is any wheat alive, rabbits are still numerous in spite of numerous drives over this county where thousands are killed each time.

Maximum temperature, 69°; minimum, -19°; precipitation, 0.01 inch; precipitation, 48-year average, 0.26 inch.

HAYS:

January has made a contribution of one more month of drought, the total precipitation being a trace in the form of snow. The temperatures ranged between 73° and -11°. There were only three days when the minimum temperature reached or passed below zero. The mean maximum for the month was 50.3° and the mean minimum 18.1°. The weather was mostly clear and quiet, there having been only a very few days of wind, none of which was of sufficient velocity to cause soil blowing. It has been another month of fine weather for all kinds of outside work.

The condition of winter wheat is more or less questionable. In this vicinity only a scanty growth was made in the fall due to dry weather, and under the continuance of dry weather during the past four months it has held on remarkably well. However, the rather sudden drop in temperature around the 20th when the minimum reached -11° was severe on the wheat but most of it still appears to be alive, although many of the plants are very weak. It would seem, unless moisture comes in the near future, there is danger of considerable thinning through the death of these weaker plants. The general appearance of the best wheat on the Dry Land project at this time, which is on three-year fallow, is about the same as a normal growth on the poorer preparations in average years. It may be well to repeat what has been stated in other reports, that the condition at Hays does not represent the condition throughout this section of the country. There are vast areas west, northwest, and southwest of Hays in which the condition is more discouraging, in that much of the wheat has never germinated. There are small local areas within the section mentioned where local rains made conditions favorable for germination and heavy fall growth, and this same favorable condition is quite general throughout some of the areas to the south and east.

TUCUMCARI:

The month was consistently warm, with the exception of a very short period of cold weather about the 20th. The mean of 43° was 5° above the 30-year January average and the highest since 1923. Zero was the lowest recorded for the month.

Wind movement was unusually high, and considerable work was performed to prevent soil movement. The soil is so dry that very little effective work can be done until moisture is received.

Precipitation of 0.34 inch was slightly above the January average. The total received the past 17 months is 7.94 inches.

Great numbers of cattle in the valley are being fed chopped yucca, with very satisfactory results where sufficient of this feed is used. On the plains are many thousands pasturing on wheat. Fall with winter moisture in that locality was considerably higher than at Tucumcari, so wheat is in fair condition on the whole. Some wheat fields that were seeded late or pastured too heavily have blown badly, but many fields are in excellent condition. Open weather has favored livestock in this vicinity, and losses have been surprisingly light. A

few days of severe weather would take heavy toll of the thousands of weak, emaciated cattle now striving to exist.

DALHART:

The past month was characterized by mild, open winter weather. Wind velocities were lower than normal for the most part, with only one day, and it the day preceding the recorded low temperature for the month, with a high wind velocity average. Soil movement was at a minimum during the month, in fact there was none which would be considered disagreeable. The outstanding features of the month were a rain of 0.68 inch on the 6th and 7th and a sudden cold spell of about two days duration which gave the minimum temperature for the winter of -3° on the 21st. The rain gave the wheat and rye a fresh start and will probably furnish sufficient moisture for these crops until warmer temperatures come. Most of the rye, a cover crop, in the south field was listed out following the rain. This was done more in hopes that we would still be able to hold the soil in place should soil blowing be severe later in the spring than that we considered it the best thing to do. Winter rye for a cover crop in other locations was unmolested and has sufficient growth, except in the conifer planting, to keep the soil from blowing. Immediately after the rain, the bare rotation plots were furrowed with shovels to keep soil blowing in check.

Maximum temperature, 70°; minimum, -3°; precipitation, 0.68 inch.

The precipitation was 0.45 inch above normal.

BIG SPRING:

Weather conditions during the month of January have been very favorable, so far as temperatures and wind velocity were concerned. On the morning of January 21 the minimum dropped to 6°, which is the minimum for the winter thus far. This cold spell lasted only for a few days, and since then the minimum has seldom dropped below 25°. Wind velocity was below normal for the entire month, and rainfall was very limited.

Soil moisture within the plow area is very limited as is evidenced by the way the soil is turning over. It is not dry enough to turn up in clods, but is just in that state where the implements will not shed readily. With the exception of the spring plowed plots, all Station land has been either plowed or listed; a fairly good job was accomplished on most of it. The farmers who have not prepared their land before this time will have to wait for a rain before they can put their land in good shape.

Station work during the past month has consisted of stacking increase Sumac, plowing and listing increase fields, winter listing plots, and ginning cotton.

Maximum temperature, 77°; minimum, 6°; precipitation, 0.13 inch.

LAWTON:

A cold wave that struck southwestern Oklahoma January 20 terminated a persistently warm period that had prevailed since the first of the month. Minimum temperatures of 2° and 3°, recorded on the 20th and 21st, were accompanied by a north wind of high velocity. The atmosphere carried a dense cloud of dust, but soil blowing was unimportant in this vicinity. Precipitation to the amount of 0.20 inch consisted of a fine mist that formed thin coats of ice. This

period of low temperatures was brief, and maximum temperatures of 63° and 76° were recorded on the 25th and 26th.

Small grains had previously encountered but little weather that would encourage winter hardening, and the rapid subjection to the subfreezing temperatures produced heavy injury. The present condition of winter oats supports the general expression and belief of farmers that the crop is now a total loss. A heavily reduced stand of winter barley may survive, but even that appears doubtful. Growth of wheat appears to be killed to the surface. There is not much indication of subsurface injury to wheat, and the renewed growth of foliage is anticipated.

The inability to continue winter pasturing of these crops imposes a difficult problem on most farmers, who have only scant supplies of feed. The spring acreage of oats will likely be reduced somewhat by the lack of funds necessary to purchase seed which sells at 70 to 80 cents per bushel.

The December rainfall of 0.15 inch and four showers in January that produced a monthly total of only 0.50 inch resulted in considerable farm complaint of the lack of soil moisture. Additional moisture is needed for wheat and for the preparation and seeding of oats. During the month of January the maximum temperature was 60° or above on 13 days. On five dates it ranged from 70° to 77°. The monthly mean of 42.7° was 5.7° above normal.

WOODWARD:

Except for a few days, January has been unusually warm and equable. Winds except on a few days have been moderate to low. Wheat had begun to suffer severely for moisture when 0.85 inch of precipitation occurred on January 6-7 in the form of rain and snow with practically no run off. On the 21st and 22nd temperatures of -3° cut the wheat back to about the same extent as severe grazing would do. Little if any of it was damaged thereby, but wheat pasture was drastically diminished, which will cause hardship for farm animals, as there is very little other feed in the country. Farmers seem generally agreed, however, that the freeze was good for the wheat. With so much warm weather there was danger of its exhausting the moisture or making too early spring growth and then being stricken by a severe freeze after it had started to joint.

The buds of Chinese elm have been very gradually swelling for a month, and if warm weather continues they will be in bloom within a week. This means probably that flowers will be killed by frost and that only scattering seed will be secured.

Last winter one of the principal activities of relief workers was cutting wood, until it seemed that all the streams might be soon denuded of timber. But a surplus of wood was piled up, and temperatures have been so high there has been little demand for it this winter. So part of the bigger and better trees that seemed the objective of every woodchopper last winter will be left to flourish yet awhile.

Howard N. Lamb, pathologist with the shelterbelt, has had headquarters here for the past six weeks, and Ernest Wright, pathologist in charge of disease work for the shelterbelt, has been here for a week. H. R. Wells, biologist working upon the eradication of rabbits, gophers and mice for the shelterbelt, has made his headquarters here for a month. There have also been numerous other official visitors in behalf of the shelterbelt. A. L. Hallsted of the Hays Station spent a week at Woodward and will continue the analyzing of soil moisture data in

cooperation with O. R. Mathews. B. F. Barnes and D. R. Burnham were visitors over the past week. Ed Stephens of the Cereal Division, stationed here for several years, left during the month to accept a position in Washington.

Station work for the month consisted of threshing sorghums, grading and graveling yards and roads, repairing machinery and harness, trapping gophers, pruning grapes, hauling brush, pulling dead trees, making shrub and grape cuttings, and picking and cleaning tree seed.

Maximum temperature, 69°; minimum, -3°; precipitation, 0.86 inch.

PENDLETON:

Temperatures for the most of January were moderate, one cold spell occurred during the period January 18-21, inclusive, with a low temperature of -11°. The fall sown wheat in this section had little or no snow protection, in most instances the snow just filled the drill furrows. Apparently the subzero weather did not injure the fall sown Federation wheat. Federation is spring wheat which is quite extensively fall sown in this section. The cold snap was broken rather abruptly with a rapid rise in temperatures on the 21st, the temperature rising 24° within an hour. Minimum temperature on the 21st was zero, maximum temperature, 44°. Station work has consisted chiefly of preparing reports, hauling dirt and cinders, and leveling around barn and implement shed.

A conference with 16 men in attendance was held in Pendleton on the 31st, between representatives of the Oregon Experiment Station, Extension Service, and the Soil Erosion Service. The purpose of the conference was to secure a better knowledge of what the Soil Erosion Service proposes to do in this section, and to secure the cooperation of experiment station and extension service men. Directors Schoenfeld, Ballard, and Rockie worked out a cooperative agreement between the Soil Erosion Service and the Oregon Experiment Station and Extension Service.

Visitors - Messrs. Schoth and Enlow of the Division of Forage Crops and Diseases on the 27th.

Maximum temperature, 65°; minimum, -11°; mean, 34°; precipitation, 1.12 inches.

JUDITH BASIN:

January was characterized by all kinds of weather conditions. Temperatures during the first week of the month were slightly above average for that period of the year. Most of the December snowfall that remained on the ground the 1st of the month was dissipated by chinook winds with no improvement in soil moisture conditions. The weather during the period January 11 to 22 was extremely cold with temperatures below zero most of the time. Snowfall was very light during this time, and that which fell was soon whirled away by driving winds. At the time of the lowest temperature, -32°, there was no snow protection on summer fallow fields. The soil temperature as recorded by the soil thermograph dropped to zero at that time. It is impossible to determine the extent of the damage if any to winter wheat by this sudden drop in temperature. There was an abrupt rise in the thermometer on January 23 and the weather the remainder of the month more like that of April or early May.

Soil moisture conditions continue very unfavorable in this section. The total precipitation for the four months October to January, inclusive, is only 1.30 inches compared to the average of 2.96 inches for this period. Maximum temperature, 60°; minimum, -32°; precipitation, 0.20 inch.